Mission Earthkeep

"Learner's Guide for Earthkeepers"

Property of: "Intergalactic Environmental Federation"

Ontario
Environment
Environnement

Printed on recycled paper
ISBN 0-7778-0344-5
PIBS 2154E

Table of Contents

Teachers' Introduction 4
Mission Earthkeep - A Story Synopsis 5
Suggestions for Post - Video Discussion 6
Welcome Earthkeepers 8
Six Missions for an Earthkeeper 8
Mission #1: Reduce 9
Mission #2: Reuse 10
Mission #3: Recycle 12
Mission #4: Conserve 14
Mission #5: Protect 15
Mission #6: Prevent 16
The Garbageless Lunch Project 17
Glossary 19

Teachers' Introduction

Today's children have a level of environmental awareness often surpassing that of their parents. Great strides have been made in making the environment a youth priority both at home and school.

Unfortunately, this unprecedented sensitivity often creates feelings of anxiety among young people who perceive a future threatened by a growing number of environmental crises. To appreciate these feelings, one need only imagine being ten years old and told that, because of the increasing risk posed by exposure to the sun, it is no longer safe to play unprotected at the beach.

As educators, our challenge must be to change attitudes and harness energy for action without creating negative states of apathy or undue apprehension among our students.

Mission Earthkeep was created to elicit positive and motivational responses to the environmental challenge. It does so by emphasizing that all children can become involved in helping protect our planet's land, air, and water. Over the course of the video, students are shown several positive examples of environmental action taken by their peers to emphasize the role of young people as a catalyst for action among family, friends, and the community.

These messages are presented in a captivating science fiction drama that will inspire the imagination of your audience. Viewers are left in a positive state of mind, knowing that environmental crises can be turned around if all of us are willing to take positive actions.

Mission Earthkeep - A Story Synopsis

A Race Against Time

The story opens with a young boy racing to a clandestine meeting somewhere in the industrial back streets of a major urban centre.

Dancing in the Light

The boy opens his briefcase and makes contact with the light beam of the Intergalactic Environmental Federation. Each of four bubble probes representing air, land, water, and living matter is absorbed by the beam. The beam collapses to signal the beginning of two-way transmission between the boy and the Environmental Overlord.

The Earthkeeper Agent Loses Face

The boy slowly peels off his human likeness. Viewers discover that the human being is really an Earthkeeper Agent. On the screen within the briefcase, viewers see a similar likeness; that of the Environmental Overlord. Angry that the Agent is again late for the transmission, the Environmental Overlord threatens termination of the mission.

Ontario's Young Humans—Keepers of the Earth

The Agent acknowledges his tardiness, but offers an explanation: although originally sent to monitor environmental action among adult human beings, the Agent has found that in many instances it is the young Ontarians who are taking positive initiatives to protect the environment.

The Garbageless Lunch

The Agent's video screen takes viewers on a visit to Arthur Robinson School in Sudbury. Students are seen practising the principles of REDUCING, REUSING, RECYCLING and CONSERVATION.

Non-Toxic Cleaning Alternatives

Next the screen flashes to the home of young environmentalist Mark Kielburger in Thornhill, Ontario. Mark and his friends have made dramatic progress in the development and promotion of non-toxic cleaning alternatives.

Individuals DO Make a Difference

Having seen the Earthkeeper Agent's evidence, the Environmental Overlord's confidence in the mission is restored. She underlines her commitment to recommend an extension of the Agent's mission to the Intergalactic Environmental Federation.

It All Depends on Them

When asked how long it will be before human beings become environmentally responsible, the Agent is at a loss to respond. Each day, he insists, more and more of Ontario's young people are becoming keepers of the earth but the involvement of many more people will be necessary for substantial progress to be realized. The Agent hypothesizes that speed with which this objective is attained will depend on the commitment to the environment by all young human beings.

Suggestions for Post - video Discussion

After viewing the video with your class, select a few of the following topics to encourage discussion among your students. The overriding objective during the class discussion should be to elicit suggestions for environmentally-positive student actions which can be carried out on a daily basis.

1. What kind of a person can earn the title of "Earthkeeper?"
   Students should be encouraged to feel that they can all be Earthkeepers by exhibiting common sense and the desire to help protect the environment by stopping pollution.
2. How did the young Earthkeepers in the video help care for and protect the earth?
   Begin a class discussion by having your students recap the positive actions taken by Earthkeepers in the video. Students might then be asked to compare the Earthkeepers' environmental projects to projects underway at their own school.
3. What are some positive steps that you and your classmates could take to conserve and protect the environment?
   Students should be encouraged to generate practical suggestions for daily environmental action in the home and at school. Remind students that their ability to make informed choices is invaluable in helping protect the planet.
4. Every person has a daily impact on the environment. What effect do ordinary activities such as using electricity, going on vacation, buying a can of beans, or eating a hamburger have on the environment?
   Invite your students to list other ways in which they feel they may be having impacts on the environment. Can they suggest any ways of minimizing these effects?
5. Describe the important work in which Mark Kielburger is involved. Why does Mark provide such a good example for other Earthkeepers?
   One of Mark's main objectives is to share his environmental ideas and awareness with others. Have your class identify various ways in which they can share this special environmental knowledge or ideas they may have with other classes in the school, friends, family, and the community. What are some positive steps that you and your classmates could take to conserve and protect the environment?
6. Describe an environmental project in which you and your family are involved. Could any of the Earthkeepers' projects in the video be adapted for use in your home?

Environmental projects which involve the whole family are vitally important in establishing a positive, caring attitude towards the planet. In this discussion, students should be invited to suggest environmental projects which could be on-going activities at home and school.

7. Why is it so important that we all take responsibility for the environment?

We all share responsibility for protecting our earth. In this discussion, begin by asking your students why they think their individual involvement is so important. Try to familiarize them with the concept of thinking globally and acting locally. It should be underlined that the most successful environmental initiatives focus on a collective responsibility to care for the planet and usually involve the whole community.

8. You will make many "consumption choices" in order to adopt a more environmentally responsible lifestyle. You might, for example, choose to use a sailboat or canoe instead of a motorboat while vacationing to decrease your impact on the environment. What other low-impact consumption choices might you make during your lifetime?

Ultimately we will all have to make significant lifestyle changes if we are to protect and prevent further damage to the environment. Our desire to make lifestyle adjustments will be crucial to our success. Have your students examine their willingness to forgo certain day-to-day conveniences to adopt a more environmentally responsible lifestyle. Would they, for example, change their buying habits in order to consume less and create smaller amounts of waste?

Welcome Earthkeepers

The Intergalactic Environmental Federation welcomes you to become an Earthkeeper. With your help we know that Ontario will be an even better place to live, work, and play for generations to come.

Each day, more and more young people from Ontario become Earthkeepers. They treat the environment with respect and are committed to sharing their environmental knowledge and ideas with family and friends. Earthkeepers are always on the lookout for new ways to reduce, reuse, recycle, conserve, protect, and prevent.

Why not share your ideas with us? If your class is participating in an environmental project or is creating a new way of passing on environmental tips to others, have your teacher forward your work to us. You might be chosen to receive an Earthkeeper Certificate! Submissions should be addressed to: The Intergalactic Environmental Federation, c/o Environment Ontario, Public Affairs and Communications Services, 135 St. Clair Ave. West, Toronto, Ontario, M4V 1P5.

Six Missions for an Earthkeeper:

Reduce, Reuse, Recycle, Conserve, Protect, and Prevent

The following pages explain the 3R's and outline why we must conserve and protect our planet as well as work towards preventing any further environmental damage. Each section is followed by a short activity and a list of suggestions for additional positive environmental action. Students should be encouraged to add their own ideas to each list in this booklet.

These pages are designed to be photocopied and distributed to students. (Earthkeepers could work in groups and thereby eliminate the need for class sets of assignments.)

Reduce

Ontario is facing a garbage crisis as its landfill sites are becoming filled to capacity. The most important way anyone has developed to manage the province's accumulating waste is by the reduction of trash at its source. Reducing garbage involves cutting down on the waste we would normally throw out. Refusing to buy waste-producing items, reusing, and recycling, are strategies to reduce our garbage.

As an Earthkeeper, your mission is to help the environment by reducing your own garbage. One way of reducing garbage in our homes is by choosing to buy only what we need and what we will use. In the video, Mark Kielburger is shown using environmentally-friendly household cleaners. He decided to reduce the amount of hazardous wastes in his home by using only safe cleaning products. Like Mark, Earthkeepers must always be looking for safe alternative ways of doing things.

Many common household articles contain chemicals that can be very harmful to living things and the environment. Most homes have a cupboard filled with concentrated and potentially hazardous polluting chemicals including drain cleaners, oil-based paints, mineral solvents, and bleach. Earthkeeper's mission is to reduce the use of some dangerous chemicals. Options include replacing chemicals with environmentally-friendly cleaning alternatives, reusing solvents, switching to water-based paints, and proper disposal of hazardous materials.

Alternative Cleaning Products Experiment

STEP #1: Divide a laminated surface or other non-staining surface into two sections with a piece of masking tape. After obtaining permission from your parents or teachers, colour each section with equal amounts of crayon markings.

STEP #2: Clean one side with a conventional chemical cleaning product.

STEP #3: Clean the other side with a mixture of baking soda and a little bit of water. How does the baking soda and water mixture compare to the commercial cleaner?

STEP #4: Many people know of at least one or two alternative cleaning substances that can replace more dangerous chemicals and reduce household hazardous wastes. Survey your class and see how many safe and effective cleaners you can identify. How many conventional chemical products could you eliminate from your home's cleaning cupboard?

Other Ways for Earthkeepers to Reduce

- Reduce the items in your family's blue box by changing your buying habits. Whenever possible, buy products in large recyclable containers instead of small cans or bottles.
- Make a message pad for your home using some of your old school notes that have writing on just one side.
- Carefully remove gift wrapping from presents you receive so it can be used again or make your own paper with potato prints on plain paper.
- If you are buying a birthday gift for a friend, pick something that is durable and that has good play-value. This will help reduce the amount of "junk" that accumulates in landfill sites.
- Do not be influenced by advertisements for cheap plastic toys on the outside of cereal boxes. Choose a cereal that does not rely on toys to sell, one that tastes good, is good for you and is sold in a large box. You will be reducing the amount of plastic and card- board in landfill sites.
- Buy rechargeable batteries instead of the disposable variety.

Reuse

There was a time, not long ago, when people saved most household items and used them again and again. Nowadays, many people are fortunate enough to have an abundance of material goods, but unfortunately throw away much more than in the past. People are now realizing that there is really no place to throw garbage that is "away." They are making a conscious effort to reuse as a way of diverting garbage from landfill sites and showing their respect for the environment.

MISSION 2:

The Earthkeepers in the video have the right idea about reusing their lunch containers instead of throwing away a lot of packaging. Your mission is to make a list of all the ways in which you can replace new items in your home, school, and the community with reusable ones.

STEP #1: Divide your class into four teams.

STEP #2: Generate a list of "reusable items" that could replace new items by brainstorming with the members of your team.

STEP #3: Each team is awarded one point for each reusable item that does not appear on anyone else's list.

STEP #4: Count each team's points to identify the group with the most original ideas.

STEP #5: Pool all the teams' lists to generate a class list of reusable items that could replace new items at school, home, and the community.

STEP #6: Challenge other classes to come up with new ideas for reusable items. Perhaps your entire school could pool ideas and develop a list that could be sent home to parents or displayed at a local community centre.

Other Ways for Earthkeepers to Reuse

- Save disposable plastic cutlery, straws, and food trays. Once they are washed they can be used again on a picnic or a camping trip.
- Save the "junk mail" that comes to your home and use it to make handmade paper. Visit or write to the Ontario Science Centre for their paper-making recipe.
- Get your whole class to bring in their old toothbrushes. Old toothbrushes make excellent art tools. Dip the brush in paint and then run your thumb across the brush to create an interesting splatter effect on paper.
- Buy some of the things you need at garage sales or visit a second-hand store before buying new clothes. Not only might you find what you need but you will probably save some money too!

Recycle

Many of the items that we use each day can be diverted from landfill sites by recycling. Cans, newspapers, bottles, and some plastics can be collected and reused. Recycling saves natural resources and cuts down on the manufacturing and pollution that often results from the making of new items.

Recycling facts every Earthkeeper should know:

- Discarded paper products, including newspaper, comprise 36% of all garbage placed at the curb for pick up each week.
- Recycling one ton of newspapers saves 17 trees. If each Metro Toronto family recycled one newspaper per day, 500,000 trees would be saved in one year.
- In Ontario, 9.4 million phone books are discarded each year. If the average phone book is two inches deep, that is a stack of phone books almost 5 kilometres high! Recycling this amount of paper would save 380,000 trees.
- Every time a tonne of steel cans is recycled, 1.5 tonnes of iron ore and 900 litres of oil are saved.
- Recycling paper creates 74% less air pollution and 35% less water pollution than making paper from virgin wood.
- Producing paper from recycled fibers uses 33% of the energy required to make paper from virgin wood.
- Many plastics can now be recycled and made into new products such as plastic lumber used for building park benches.
- The average household that recycles saves 400 kilowatt-hours of electricity per year. This reduces the need for power plants to produce as much electricity and this in turn means that there will be less pollution created in the first place.

MISSION 3:

The bottoms of most recyclable plastic containers have a triangle formed by three arrows with a code number in the middle and letters beside the symbol. The different numbers and letters are used by recyclers in the sorting of plastics.

STEP #1: Attempt to find examples of plastic containers that each display a different number code. What types of containers belong to each of the categories in the following chart:

STEP #2: With the help of other Earthkeepers decide which kinds of plastics are found most often in home and at school. How might the triangular symbol with its numbers and letters be used by ordinary people interested in recycling?

STEP #3: Make a bulletin board to display your suggestions and findings to other students.

Other Ways that Earthkeepers can Recycle:

- Look for the "recycled" logo on products and if you have a choice between two similar items buy the recycled one. The more recycled goods we all buy, the sooner manufacturers will make more recycled products.
- Encourage your family to drink milk that comes in refillable jugs.
- Buy food in recyclable cans or jars and avoid throw-away packaging when possible.
- If your community has a limited recycling program in place, write your local government representative and find out why some kinds of items are not being recycled.

Plastics Recycling Coding System

1	PETE	Polyethylene Terephthalate
2	HDPE	High Density Polyethylene
3	V	Polyvinyl Chloride
4	LDPE	Low Density Polyethylene
5	PP	Polypropylene
6	PS	Polystyrene
7	OTHER	Other

Conserve

Be a part of a Conserver Society not a Consumer Society

Conserving the earth's resources involves living in a non- wasteful way and making sure that the planet will remain a good place to live for future generations.

Ways for Earthkeepers to be part of a Conserver Society

- In the winter, close the drapes in your classroom when it gets dark so that the room will lose less heat during the night.
- Divert the runoff from the roof of your home or school into a barrel to prevent it from draining away into the storm sewer. Use the stored rain water to water your plants.
- Shut off the tap water while you are brushing your teeth.
- Conserve by reusing your bath water to wash the family dog or take a pail of the water outside and wash your bicycle.
- If you are playing water games outside this summer, try to play on the grass where the water can be used by plants instead of running into the storm sewers.
- Support your local conservation areas by visiting them often. Take a friend on a field trip for his or her birthday

MISSION 4:

Write the script for a new Earthkeeper video in which you make friends with the Agent and help him to monitor positive methods young Ontarians are using to conserve.

Protect

Protecting the environment involves behaving in a way that does not harm but does help the planet. Many individuals and conservation-minded groups are making a special effort to protect the environment by cleaning up streams, wilderness parks, and neighborhood play areas in their communities.

Ways for Earthkeepers to Protect the Environment:

- If your community is being polluted by a local industry, write to the government and demand that the polluters clean up.
- Remove staples and nails from the bark of a tree that has been used as a sign post.
- Respect each person's right to be free from excessive noise.
- Find out where your family can take their household hazardous wastes. Call your local garbage collector to get the address of the nearest hazardous waste depot.
- Encourage your family to ride their bicycles instead of taking frequent trips in the car. You will be helping reduce the amount of air pollution.
- If you live in a house, plant trees on your property. Trees help clean the air and keep it fresh to breathe. Coniferous trees planted on the north side of your house act as windshields to keep your home cozy in the winter. Deciduous trees also help to keep your house shady and cool in the summer without interfering with solar warming in winter.

MISSION 5:

This year get a group of your friends together and make a commitment to protect and clean up a small area in your community. Make a list of all the tools and supplies that you will need. Ask your principal if he/she can send a letter home asking parents to lend or donate these items to the project.

Prevent

Earthkeepers prevent future damage to the environment by making sensible daily choices.

Ways for Earthkeepers to Prevent Damage to the Environment:

- Draw a picture of fish and hang it over the laundry sink. This will help remind your whole family never to pour toxic wastes or solvents down the drain. If your drain ever becomes plugged, use a plunger followed by baking soda and vinegar instead of chemicals to clear the pipe.
- Take used batteries to a hazardous waste depot instead of throwing them out.
- Be an informed consumer and buy only environmentally-friendly products.

MISSION 6:

The list below contains four examples of ordinary activities that can harm the environment. With the help of your classmates, come up with some safer alternatives that could prevent environmental damage.

Action	Suggestions for Prevention
1. Pouring used oil-based paint or motor oil down the storm sewer.	______________________
2. Using an air-conditioner that could be leaking CFC's.	______________________
3. Throwing out a broken mercury thermometer into your garbage.	______________________
4. Using the dishwasher every day.	______________________

The Garbageless Lunch Project

Taking part in a garbageless lunch project is a great way for Earthkeepers to gain an awareness of the garbage problem and to help solve it. Earthkeepers are empowered by working together to reduce their garbage, reuse and recycle what they can, and compost their organic waste. Follow the steps below to discover how much fun it can be to achieve such positive results from eating an environmentally-friendly lunch!

Conduct a lunch waste audit:

The first step in developing a garbageless lunch program is to find out how much waste is being created during lunch-hour each day. You can do this by obtaining permission for your entire school to take part in a "lunch waste audit." A waste audit is a detailed study of the weight and volume of garbage that your school produces during lunch. A waste audit allows students to look at the kinds of garbage being thrown away and to determine where to begin reducing waste.

Have the lunch garbage from each class bagged and tagged with a clearly marked room number. Have all the bags brought to one location. (It may be a good idea to spread a large plastic sheet on the floor of the sorting area.) With rubber gloves, empty the bags one at a time and sort the garbage according to the following categories: plastic, glass, metal, organic, paper, cardboard, and other. With the help of your science or math teachers, weigh the trash in each category. Which class produces the most lunch- time waste by weight? Where does your school need to cut down most? Can you suggest some ways in which a new waste reduction plan could be started?

Lunch Equipment

Cutting down on lunch-time waste means reducing the amount of food packaging that is thrown away each day. This can be successfully accomplished by using reusable containers to store student lunches. Seek out the student with the lunch that produces the least amount of waste. What kind of set-up does the student have? Does she use a thermos and a fabric lunch bag? Does he use reusable containers and cutlery? Find out which stores stock such lunch supplies and encourage your whole class to get equipped.

Composting

Organize a garage or bake sale to raise the money needed to buy your school several composters. Some students may also wish to get involved in vermicomposting on an individual class basis.

Garbageless Tuesdays

Get all the classes in your school involved in "Garbageless Tuesdays." On Tuesdays (or another day that is convenient), the whole school attempts to produce as little lunchtime waste as possible. After you have done your school waste audit you will have obtained detailed information about the amount of garbage each class normally creates and you will be able to compare it with the results from "Garbageless Tuesdays." Which class reduced its waste the most?

Glossary

coniferous trees: a tree that has cones.

CFC'S are a family of chemicals containing the substances chlorine, fluorine, and carbon (hence the name CFC). These chemicals, which are non-toxic and non-flammable, are used in a large number of applications including refrigeration, fire prevention, manufacturing, and medical products. CFC's released into the air break down high up in the atmosphere and damage the ozone layer.

composter: an outdoor container used to collect kitchen scraps and yard waste which allows the material to break down and eventually be used as fertilizer.

Conserver Society: A society that makes great efforts in reducing the use of energy and material resources and that is willing to change its habits to reduce the production of waste and other materials which can harm the environment.

Consumer Society: A society that lives with little regard for the amount of energy or material resources it uses up and/or how the environment is degraded by the disposal of their waste.

deciduous trees: trees that have leaves.

hazardous wastes: garbage that is dangerous to living beings and the environment.

junk mail: promotional newspapers, magazines, letters, or other material that is delivered to your door without your permission.

kilowatt-hour of electricity: a measure of the amount of electrical energy used.

landfill site: a place where garbage is regularly buried under and on top of layers of earth. Many landfill sites in Ontario are simple pits, often former gravel pits, into which garbage is thrown. Some landfill sites are now using engineered systems to contain some of the toxic liquids called leachates which seep out of garbage.

logo: a symbol used by a company as its emblem.

mercury: a heavy silvery and poisonous liquid metal.

natural resources: valuable materials collected from the earth such as water or minerals.

organic waste: garbage that comes from plants and animals such as food leftovers or leaves.

play-value: a qualitative term used to describe the amount of interest and time a toy will give a child.

septic system: underground plumbing used to dispose of sewage. storm sewer: an underground system of pipes that collects the runoff from city streets and empties it into local waterways.

toxic wastes: garbage which is poisonous in very small amounts.

vermicomposting: feeding plant and animal leftovers such as apple cores and eggshells to worms kept in a special bin.